CLAIMS

1. A method for frequency correction in a multicarrier system, comprising:
- receiving a signal ($r_S[n]$) comprising a stream of data signals ($r_{c,l}[k]$),
- calculating an estimated phase offset ($\varphi_{est}[k]$) for each data signal ($r_{c,l}[k]$) as a function of thereof,
- calculating a predicted phase offset ($\varphi_A[k]$) for each data signal as a function of the estimated phase offset ($\varphi_{est}[k]$) thereof and the estimated phase offset ($\varphi_{est}[k-1]$) of a preceding one of the data signals ($r_{c,l}[k-1]$), and
- correcting the received signal ($r_S[n]$) by correcting a phase of each data signal ($r_{c,l}[k]$) as a function of the predicted phase offset ($\varphi_A[k]$) thereof.

2. The method according to claim 1, comprising:
- calculating the predicted phase offset ($\varphi_A[k]$) further as a function of the predicted phase offset ($\varphi_A[k-1]$) of the preceding one of the data signals ($r_{C,l}[k-1]$), or
- calculating the predicted phase offset ($\varphi_A[k]$) further as a function of the predicted phase offset ($\varphi_A[k-1]$) of the preceding one of the data signals ($r_{C,l}[k-1]$) and the predicted phase offset ($\varphi_A[k-2]$) of one of the data signals ($r_{c,l}[k-2]$) preceding the preceding one of the data signals ($r_{C,l}[k-1]$).

3. The method according to claim 1 or 2, comprising:
- calculating a phase correction offset ($\varphi_{corr,l}[k]$) for each data signal ($r_{C,l}[k]$) as a function of the predicted phase offset ($\varphi_A[k-1]$) of the preceding one of the data signals ($r_{C,l}[k]$), and
- correcting each data signal ($r_{C,l}[k]$) as a function of the phase correction offset ($\varphi_{corr,l}[k]$) thereof.

4. The method according to one of the preceding claims, comprising:
- separating each data signal ($r_{C,l}[k]$) in at least two data signal samples ($r_{C,1}[k],\ldots, r_{C,Nfft}[k]$),
- calculating a predicted sample phase offset ($\varphi_{S,1}[k],\ldots,\varphi_{S,Nfft}[k]$) for each of said data signal samples ($r_{C,1}[k],\ldots,r_{CNfft}[k]$) as a function of the predicted phase offset ($\varphi_A[k]$) of a corresponding one of the data signals ($r_{C,l}[k]$), and

- correcting the phase of each data signal ($r_{C,l}[k]$) further by correcting a phase of each of the data signal samples ($r_{C,1}[k],\ldots,r_{C,Nfft}[k]$) as a function of a respective one of the predected sample phase offsets ($\varphi_{S,1}[k],\ldots,\varphi_{S,Nfft}[k]$).

5. The method according to claim 4, comprising:
- separating each data signal ($r_{C,l}[k]$) such that a first of the data signal samples ($r_{C,1}[k]$) represents the beginning of the corresponding one of the data signals ($r_{C,l}[k]$).

6. The method of claim 4 or 5, comprising:
- calculating a sample phase correction offset ($\varphi_{S,1}[k] \cdot 1,\ldots,\varphi_{S,Nfft}[k] \cdot N_{fft}$) for each of the data signal samples ($r_{C,1}[k],\ldots,r_{C,Nfft}[k]$) as a function of the predicted sample phase offset ($\varphi_{S,1}[k],\ldots,\varphi_{S,Nfft}[k]$) and the predicted phase offset ($\varphi_A[k]$) of the corresponding one of the data signal ($r_{C,l}[k]$), and
- correcting the phase of each data signal ($r_{C,l}[k]$) by correcting the phase of each of the data signal samples ($r_{C,1}[k],\ldots,r_{C,Nfft}[k]$) thereof as a function of a corresponding one of the phase correction offsets ($\varphi_{corr,l}[k]$) and a corresponding one of the sample phase correction offsets ($\varphi_{S,1}[k] \cdot 1 ,\ldots,\varphi_{S,Nfft}[k] \cdot N_{fft}$).

7. The method of one of the claims 4 to 6, comprising:
- calculating each predicted sample offset ($\varphi_{S,1}[k],\ldots, \varphi_{S,Nfft}[k]$) as a function of the predicted phase offset ($\varphi_A[k]$) of the corresponding one of the data signals ($r_{C,l}[k]$) and a measure being indicative of a distance (x_{k+1}) between a main phase reference point (R_{Ce}) for the received signal ($r_S[n]$) and a phase reference point (R_{SK}, S_{SK}) for the preceding one of the data signals ($r_{C,l}[k-1]$).

8. The method of one of the preceding claims, comprising:
- receiving a preamble signal (C64) preceding the data signals ($r_{C,l}[k]$),
- calculating an estimated phase arc ($H_m[k]$) as a function of the preamble signal (C64), and
- calculating the estimated phase offset ($\varphi_{est}[1]$) of the data signal ($r_{C,l}[1]$) subsequent the preamble signal (C64) as a function thereof and the estimated phase arc ($H_m[k]$).

9. The method of claim 7, comprising:
- defining the main phase reference point (R_{Ce}) to be indicative of the middle of the preamble signal (C64) in the time domain, and/or
- defining the phase reference points (R_{SK}) to be indicative of the beginning (S_{SK}) of the corresponding data signal ($r_{Cl}[k]$) in the time domain.

10 The method according to claim 9, comprising:
- defining a phase reference point (R_{S1}) for the data signal ($R_{C,l}[1]$) subsequent the preamble signal (C64) to be indicative of the middle (R_{S1}) of the subsequent data signal ($r_{C,l}[1]$) in the time domain.

11. The method according to one of the claims 4 to 10, comprising:
- separating each data signal ($r_{C,l}[k]$) in the data signal samples ($r_{C,1}[k],\ldots, r_{C,Nfft}[k]$) by means of sampling the received signal ($r_S[n]$) or each data signal ($r_{C,l}[k]$).

12. The method according to one of the preceding claims, comprising:
- receiving an orthogonal frequency division multiplex (OFDM) signal as the received signal ($r_S[n]$), wherein a stream of symboles thereof represent the stream of data signals ($r_{C,l}[k]$), and at least one preamble symbol thereof represent the preamble signal (C64).

13. An apparatus for frequency correction in a multicarrier system, comprising:
- receiving means (2, 4) for receiving a signal comprising a stream of data signals,
- a frequency correction means (6) for frequency correction of each data signal in response to a corresponding predicted phase offset, and
- a phase locked loop means (6,... 24) for generating the predicted phase offsets, comprising
-- a phase discrimination means (12, 14, 16) for generating an estimated phase offset for each data signal as a function thereof,
-- a filter means (18, 20, 22) for receiving estimates phase offsets and generating the predicted phase offset for each data signal as a function of the estimated phase offset thereof and the estimated phase offset of a preceding one of the data signals.

14. The apparatus according to claim 13, characterized by:
- the filter means (18, 20, 22) comprising a first order loop filter means (18) for receiving the estimated phase offsets and an integrator (20) for receiving outputs of the first order loop filter means (18).

15. The apparatus according to claim 14, characterized by:
- a delay means (22) for receiving outputs of the integrator (20).

16. The apparatus according to one of the claims 13 to 15, characterized by:
- a calculation means (24) for calculating predicted sample phase offsets in response to the predicted phase offsets.

17. The apparatus according to claim 16, characterized by:
- the calculation means (24) being coupled to the filter means (18, 20, 22).

18. The apparatus according to claim 17, characterizes by:
- the calculation means (24) being coupled to the delay means (22).

19. The apparatus according to one of the claims 13 to 18, characterized by:
- the frequency correction means (6) being coupled to the filter means (18, 20, 22) and the calculation means (24).

20. The apparatus according to one of the claims 13 to 19, characterized by:
- the frequency correction means (6) and the filter means (18, 20, 22) being adapted to be operated according to the method of one of the claims 1 to 12.

21. A transceiver for wireless communication, characterized by the apparatus according to one of the claims 13 to 20.

22. A transceiver for wireless communication, characterized by being adapted to be operated by the method according to one of the claims 1 to 12.